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This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Original) A damping apparatus, comprising:

a linear to rotary conversion mechanism comprising a translatable member that is adapted for generally linear translation in a forward and a reverse direction and a rotatable member comprising a rotatable shaft that is rotatably coupled to the translatable member; wherein translation of the translatable member in one of the forward or the reverse directions produces a forward or a reverse rotation of the rotatable member and shaft, respectively; and

a damping mechanism comprising a hub that is fixed to the shaft, a means for generating a variable electromagnetic field in response to an applied electrical signal that may be continuously varied in response to an input signal that is representative of a desired damping force and a fluid having a viscosity that may be continuously varied by application of the electromagnetic field that is in touching contact with the hub, wherein application of the variable electromagnetic field to the fluid produces changes in the viscosity of the fluid that in turn provides variable resistance to rotation of the hub and translation of the translatable member.

2. (Original) The damper of claim 1, wherein the fluid is a magnetorheological fluid.

3. (Original) The damper of claim 2, wherein the means for applying an electromagnetic field is a coil that is located proximate the hub and magnetorheological fluid.

4. (Original) The damper of claim 3, wherein the translatable member comprises a ball nut and the rotatable member comprises a ball screw.

5. (Original) The damper of claim 3, wherein the translatable member comprises a rack and the rotatable member comprises a pinion.

6. (Original) A damping apparatus, comprising:

a translatable member that is adapted for generally linear translation in a forward and a reverse direction;

a rotatable member comprising a rotatable shaft that is rotatably coupled to the translatable member; wherein translation of the translatable member in one of the forward or the reverse directions produces a forward or a reverse rotation of the rotatable member and shaft, respectively;

a damping mechanism comprising a housing having a first end with a bore that is adapted to rotatably receive the shaft therethrough, a sidewall having an inner surface and a second end, a hub fixed to the shaft and having an outer surface proximate a portion of the inner surface of the sidewall such that the outer surface of the hub and sidewall of the housing define a channel therebetween, a means for applying an electromagnetic field within the channel, and a fluid located within the channel having a viscosity that can be varied by application of the electromagnetic field.

7. (Original) The damper of claim 6, wherein the fluid is a magnetorheological fluid.

8. (Original) The damper of claim 7, wherein the means for applying an electromagnetic field within the channel is a coil that is located proximate the channel.

9. (Original) The damper of claim 8, wherein the translatable member comprises a ball nut and the rotatable member comprises a ball screw.

10. (Original) The damper of claim 8, wherein the translatable member comprises a rack and the rotatable member comprises a pinion.

11. (Original) A damping apparatus, comprising:

a translatable member that is adapted for generally linear translation in a forward and a reverse direction;

a rotatable member comprising a rotatable shaft that is rotatably coupled to the translatable member; wherein translation of the translatable member in one of the forward or the reverse directions produces a forward or a reverse rotation of the rotatable member and shaft, respectively;

a damping mechanism comprising a housing having a first end with a bore that is adapted to rotatably receive the shaft therethrough, a sidewall having an inner surface and a second end, a hub having an outer surface that is fixed to the shaft and located within the inner surface of the sidewall such that the hub and sidewall form a channel therebetween, a means for applying an electromagnetic field within the channel, and a fluid located within the channel having a viscosity that can be varied by the application of the electromagnetic field.

12. (Original) The damper of claim 11, wherein the fluid is a magnetorheological fluid.

13. (Original) The damper of claim 12, wherein the means for applying an electromagnetic field within the channel is a coil that is located proximate the channel.

14. (Original) The damper of claim 13, wherein the translatable member comprises a ball nut and the rotatable member comprises a ball screw.

15. (Original) The damper of claim 13, wherein the translatable member comprises a rack and the rotatable member comprises a pinion.

16. (Original) The damper of claim 13, wherein the hub comprises a cylindrical base having an outer rim and that is fixed to the shaft and a cylindrical wall extending from the outer rim and located adjacent to the inner surface of the sidewall of the housing, wherein a first portion between the sidewall of the housing and the cylindrical wall of the hub comprises the channel.

17. (Original) The damper of claim 16, wherein the sidewall has a recess in the inner surface and the coil is located within the recess.

18. (Original) The damper of claim 16, wherein the cylindrical base of the hub comprises a non-magnetic material and the cylindrical wall of the hub comprises a magnetic material.

19. (Original) The damper of claim 16, further comprising a lower seal and an upper seal for sealing the fluid in the channel, said lower seal located between the first end of the housing and the hub and said second seal located between the second end of the housing and the hub.

20. (Original) The damper of claim 16, further comprising a cylindrical core attached to the second end of the housing and extending along and adjacent to the cylindrical wall of the hub, wherein a second portion between the cylindrical wall of the hub and the cylindrical core further comprises the channel.

21. (Original) The damper of claim 20, wherein the core has a recess in an outer surface and the coil is located within the recess.

22. (Original) The damper of claim 20, wherein the cylindrical base of the hub comprises a non-magnetic material and the cylindrical wall of the hub and the cylindrical core comprise a magnetic material.

23. (Currently Amended) The damper of claim 20, further comprising a lower seal and an upper seal for sealing the fluid in the channel, said lower seal located between the first end of the housing and the hub and said second seal located between the ~~second end of the housing~~ cylindrical core and the hub.

24. (Currently Amended) The damper of claim ~~23~~ 13, wherein the hub comprises a cylindrical disk that is fixed to the shaft and the sidewall of the housing has a cylindrical recess that is adapted to receive the hub, and wherein a first portion between the sidewall of the housing in the recess and the hub comprise the channel.

25. (Currently Amended) The damper of claim ~~21~~ 11, wherein the fluid is an electrorheological fluid.

26. (Original) The damper of claim 25, wherein the means for applying an electromagnetic field within the channel is a pair of electrodes that are located proximate the channel.

27. (Original) The damper of claim 26, wherein the translatable member comprises a ball nut and the rotatable member comprises a ball screw.

28. (Original) The damper of claim 26, wherein the translatable member comprises a rack and the rotatable member comprises a pinion.

29. (Original) The damper of claim 26, wherein the hub comprises a cylindrical base having an outer rim and that is fixed to the shaft and a cylindrical wall extending from the outer rim and located adjacent to the inner surface of the sidewall of the housing, wherein a first portion between the sidewall of the housing and the cylindrical wall of the hub comprises the channel.

30. (Original) The damper of claim 29, further comprising a lower seal and an upper seal for sealing the fluid in the channel, said lower seal located between the first end of the housing and the hub and said second seal located between the second end of the housing and the hub.

31. (Original) The damper of claim 29, further comprising a cylindrical core attached to the second end of the housing and extending along and adjacent to the cylindrical wall of the hub, wherein a second portion between the cylindrical wall of the hub and the cylindrical core further comprises the channel.

32. (Currently Amended) The damper of claim 31, further comprising a lower seal and an upper seal for sealing the fluid in the channel, said lower seal located between the first end of the housing and the hub and said second seal located between ~~second end of the housing~~ cylindrical core and the hub.

33. (Original) The damper of claim 26, wherein the hub comprises a cylindrical disk that is fixed to the shaft and the sidewall of the housing has a cylindrical recess that is adapted to receive the hub, and wherein a first portion between the sidewall of the housing in the recess and the hub comprise the channel.